

PROJECT NUMBER: 1307
PROJECT TITLE: Reconstituted Tobacco Development
PROJECT LEADER: R. G. Uhl
PERIOD COVERED: April, 1988

I. IMPROVED SHEET PROPERTIES

A. Objective: Improve the physical characteristics and blend performance of reconstituted sheet materials.

B. Results:

1. ART Project - Subjective screening of RL sheets incorporating ART stems shows a subjective preference for shredded stems over CRS. However, post-ART CRS made into IS at Louisville and subsequently incorporated into RL gave the least objectionable subjective response to date.

A second study of cigarette-to-cigarette blend variation for stem components (ES, IS, shredded stem) confirmed that variance increases with inclusion level but is independent of stem product type.

Short term microbial stability studies on pre and post-ART stems show no obvious differences. Statistical verification will be difficult due to variation in results, even between duplicate samples. Long term stability studies are in progress.

2. Humectants - Control and test cigarettes for POL evaluation of glycerin-free blends were subjectively screened by the Richmond panel and deemed subjectively unacceptable. Casing formulations will be adjusted and POL cigarettes remade.

PG/glycerin-free RCB was made at the BL Plant to complement the RL products made at Park 500 in March. The test RCB was targeted at 2% lower packout OV (compensation for the absence of a volatile PG component), but had to be run at normal OV levels to eliminate cracking. The test sheet was also less uniform (thick/thin spots). This material is nevertheless acceptable for use in blends to evaluate PG/glycerin-free strip casings and aftercuts.

Oven OV values derived by the PM-USA method (100°C for 3 hrs) vs the PME method (103°C for 100 minutes) were compared using sheet components and MKS blend. PM-USA would report a higher OV value ($\Delta = +0.3$). This difference would be reduced to 0.2 without RCB (Δ OV for RCB = +0.7 by PM-USA method vs PME method).

Pilot RL sheets containing individual humectants and no humectant are being produced for Semiworks processing (at several OV levels) to compare the effectiveness of humectants vs water in improving survivability.

3. RL - Licorice incorporated into pilot RL baseweb showed no improvement in baseweb absorption of size, either visually or by droplet contact angle measurement. Glycyrrhizic acid analysis of baseweb showed licorice is preferentially retained by the baseweb on the paper machine.

C. Plans:

1. Produce pilot RL to subjectively evaluate ART stems at reduced monopotassium citrate levels.
2. Evaluate ART stems at the final citrate level to determine an incorporation rate that maintains subjective parity in RL.

II. SUBJECTIVE MODIFICATION OF RL

A. Objective: Improve or modify the subjective character of RL.

B. Results:

1. Analysis over the life of Park 500 150B size batches (from fresh to thickening/recycle) showed no change in the ratio of analyzeable flavor components. Insoluble solids increase by half; this is attributed to baseweb fiber and possibly accumulation of dry flavors rejected at the size press nip. Viscosity doubles and there is a threefold increase in yield stress (force required to fluidize the gel). Thickening increases size application to the baseweb, and hampers control of finished sheet solubles level.
2. Subjective screening of dry flavor replacements (would allow size screening and retard or eliminate thickening) has shown two acceptable suppliers for each of the two replacement flavor components. Native extracts (intermediate products) of the liquid flavor from both vendors are being analyzed in an effort to attain interchangeability and a common analytical specification for both suppliers. Shelf life of the liquid flavors will also be evaluated.
3. A nondisclosure agreement was sent to Branson Sonic Power prior to renting an ultrasound unit for evaluation on breaking up Modified 150B size precipitates. The pilot rental unit should be available at the end of May. Other groups have requested testing time to evaluate its applicability to pectin binder extraction/mixing and binder defoaming.

C. Plans:

1. Produce pilot sheets to evaluate liquid flavors for batch to batch consistency and shelf life.
2. Complete the piping design and installation to evaluate an ultrasound unit in the pilot size press system.